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Frequency of Post-Endoscopic Retrograde Cholangiopancreatography (ERCP) Complications

Asma Abdul Razzak, Muhammad Raza

ABSTRACT

Objective: Endoscopic Retrograde Cholangiopancreatography (ERCP) is a highly technical procedure that carries some risks associated with it. It consolidates the utilization of an endoscope with X-ray to look at the biliary and pancreatic channels with the ability to intervene when indicated to address problems identified during surgery. This study aimed to determine the frequency

Study Design & Setting: Cross-sectional study design at Dow Hospital Karachi.

Methodology: The patients with the age ranging from 18 to 60 years who had endoscopies were taken from July 2020 to February 2021. All the pregnant patients and those who were unwilling to participate in the study were excluded from the study. The data were collected from the patients and they were kept under observation for 4 – 6 hours after ERCP to monitor the development of an immediate complication. The findings were recorded only at 48 hours of the procedure.

Results: The age of the participants was 37±12 years on average. The complications were recorded with pancreatitis at 36% followed by 34.5% bleeding and 29% perforation. 92% of the procedures were successful.

Conclusions: In conclusion, while ERCP is generally considered a safe and effective procedure, it is not without risks. The most common complications of ERCP are pancreatitis, bleeding, and perforation.

Keywords: Endoscopic Retrograde Cholangiopancreatography, Pancreatitis, Endoscopy

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INTRODUCTION:

Endoscopic Retrograde Cholangiopancreatography or ERCP is a procedure that is commonly used by Gastroenterologists in a number of clinical scenarios to both diagnose and treat issues involving the upper gastrointestinal tract. As more non-invasive diagnostic modalities have emerged over the past few decades, the ERCP has become almost exclusively a therapeutic procedure and a less invasive non-surgical therapeutic procedure. ERCP has become the standard initial management for most pancreaticobiliary diseases. As with all invasive procedures, ERCPs have a number of side effects including bleeding, perforation, acute pancreatitis, and cholangitis.[1] Pancreatitis is the most common complication of ERCP, with an incidence ranging from 1% to 9% depending on the patient population and procedural factors.[2]

Endoscopic retrograde cholangiopancreatography is a medical procedure that combines endoscopy and fluoroscopy to diagnose and treat conditions of the bile ducts and pancreas. During the procedure, an endoscope (a thin, flexible tube with a camera and light at the end) is inserted through the mouth, down the esophagus, and into the stomach and duodenum. From there, the endoscope is advanced into the bile ducts and pancreatic ducts. A contrast dye is then injected into the ducts, and X-ray images are taken to help diagnose any abnormalities, such as gallstones, blockages, or tumors.[3] ERCP can also be used to perform certain treatments, such as removing gallstones or inserting stents to open blocked ducts.[4]

Patients who underwent general anesthesia with intubation had a 1.27 times increased risk of low blood pressure and hypoxia whereas those who underwent sedation without intended intubation had 1.51 times reduced risk. The reported incidence of such complications varies from study to study with Pancreatitis and Cholangitis having an incidence of 1-5% depending on the study, hemorrhage having an incidence of 1-4%, and perforation having an incidence of 1-2%.[5]

Bleeding post ERCP is a major concern for healthcare professionals despite its low incidence as it can lead to major complications in patients who often have prior comorbidities.[6] A number of risk factors can predispose a patient to bleeding after undergoing an ERCP including use of anticoagulants whether or not the physician performed a sphincterotomy,[7] presence of liver cirrhosis,[4] age[5] and a number of others. As such, it is the goal of all physicians performing the procedure

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to minimize the risk of hemorrhage in the often already at risk population undergoing the treatment.

Perforation is another possible complication that can cause major issues post ERCP. Perforations are classified using the Stapfer classification of duodenal perforations.

Stapfer I: Endoscopy related injuries to the wall of the duodenum

Stapfer II: Perforations associated with sphincterotomies

Stapfer III: Perforations of the actual ducts

Stapfer IV: Micro perforations

Perforations may require immediate surgical intervention depending on their size and location.[8] The physician performing the ERCP must be vigilant in preventing such complications from occurring. Perforation is a rare but serious complication of ERCP, with an incidence ranging from 0.1% to 1%.[9]

During an ERCP, the patient undergoes conscious sedation in which they are given intravenous medication which causes them to become relaxed and allowing them to tolerate the procedure. Occasionally, in more complex cases, the patient may undergo general anaesthesia and be completely sedated during which they require intubation.[10] Difficult intubation is a risk factor for poorer outcomes post ERCP.[11] The studies have shown that the use of artificial airways and prolonged intubation can lead to higher risk of post-procedural complications.[10] According to the studies, the ES incision's length is the most crucial element. Therefore, in order to avoid post-ES bleeding, endoscopists who do ERCP should try to keep the ES incision to the shortest possible length. Endoscopic hemostasis should be initially considered if post-ES bleeding develops since it is a sufficient and reliable method.[12]

METHODOLOGY:

This cross-sectional study was carried out at Dow Hospital Karachi with the agreement of the institute's ethical committee with Reference App # 0488-2020-DUHS-ERC. The participants who had endoscopy were taken from July 2020 to February 2021 by using non-probability consecutive sampling technique. The individuals with age range of 18 to 60 years were included in the study. All patients were kept under observation for 4-6 hours post ERCP to monitor development of immediate complications. Demographic data, lab reports indicating the findings of ERCP was collected. The patients were assessed 48 hours of ERCP to record any further complications. The outcome measures were the success rate of the procedure and the failure rate. The sample size calculated from open EPI version 3 estimated sample size 112 with the 99% confidence level and 5% margin level. Data was entered and analyzed using statistical package of social sciences (SPSS) version 20. Descriptive statistics were employed as mean and standard deviation for the numeric findings whereas frequency with percentages for the qualitative data.

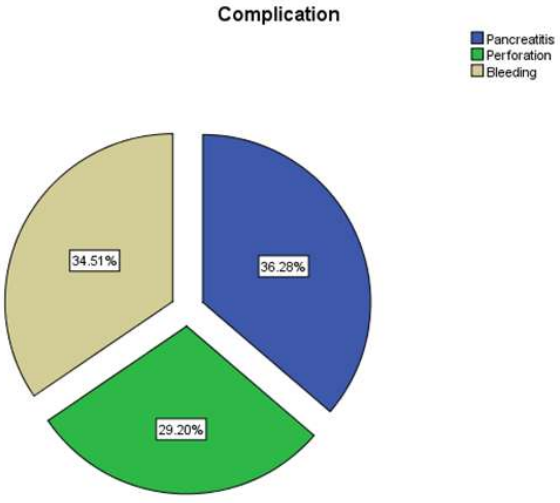
RESULTS:

Out of 113 patients who went through ERCP 58(51%) were males and 55(49%) were females. The mean age of the participants was 37±12 years. The common bile duct (CBD) cannulation was directly done in all patients. Sphincteroplasty needed for extraction of large stones. CBD stones were found in 17(15%) patients. 22 cases (19.5%) of large stones were observed that were unreachable by endoscopic extraction and as a result, a stent was inserted to ease obstruction in these patients. The details of all endoscopic findings are given in Table 1. The complications were recorded with 41(36%) pancreatitis followed by 39(34.5%) bleeding and 33(29%) perforation (Figure 1). Based on length of hospitalization, post-ERCP acute pancreatitis was rated as mild, moderate, or severe. There were 21 cases of acute pancreatitis (4.4%), 18 people had moderate pancreatitis, while 3 people had severe cases with fluid collections. After a brief hospital stay of a few days, they were discharged. Retroperitoneal perforation occurred in 3 cases (0.6%), of which 2 were treated conservatively and 1 had surgery. A severe post-procedure hemorrhage in 4 patients (0.8%) requiring a re-scope with an adrenal injection on the bleeding side and the hemostasis achieved. Most of the procedures were successful comprised of 104(92%) cases.

Table 1: Frequency of Findings and their percentages.

Endoscopic Findings	Number of cases	Percentages
Stone	17	15.0
Structure	22	19.5
Stone With Structure	13	11.5
Ampullary Growth	22	19.5
PD Stones	17	15.0
Large Stone	22	19.5

Figure 1: Percentages of complications



DISCUSSION:

After an endoscopic retrograde cholangiopancreatography (ERCP) procedure, patients are usually monitored in a recovery area until the sedative wears off and they are alert enough to be discharged. Depending on the type of sedation used, this can take several hours.[2] It is common to experience some mild side effects after the procedure, such as a sore throat, bloating, and cramping. These side effects usually resolve within a day or two. Patients may also experience some mild bleeding from the biopsy site or where an instrument was inserted during the procedure. More serious complications after ERCP, such as pancreatitis, bleeding, infection, or perforation of the gastrointestinal tract, can occur but are relatively rare. Patients should be advised of these potential complications before the procedure and instructed to seek medical attention if they experience symptoms such as severe abdominal pain, fever, or vomiting after the procedure.[11]

Malignancy at an age over 80 years old and sphincterotomy in the pancreatic duct were found to be important risk factors for death following ERCP-related perforations in a population-based investigation.[13] Since pancreatic duct sphincterotomy has been introduced as a useful adjuvant in challenging biliary cannulation, the high prevalence of sphincterotomy in the pancreatic duct among fatal perforations is a significant observation.[14] Numerous prospective and retrospective studies have presented data on ERCP-related problems in the elderly. These investigations revealed that both old and younger participants had a high success rate for selective biliary cannulation and PEP.[15]

According to various prospective studies, the total ERCP or sphincterotomy complication rate is between 5 and 10 percent.[16-18] ERCP-related problems can be divided into two categories: those that are particular to the surgery itself and those that are general, such sedation-related side effects.[19] Post-ERCP pancreatitis is one of the most dangerous ERCP-related consequences (PEP).[19] This study showed 39 patients with this complication which comprised of 38%.[15] The endoscopist's method affected the risk of pancreatitis and a large portion of the damage to the pancreas appeared to be caused by the procedure of cannulating the bile duct rather than by the sphincterotomy itself.[9] A score of 2 on the modified Observer's Assessment of Alertness/Sedation (OAA/S) scale was regarded as severe sedation by the researcher who examined how long it took the patient to achieve it following the initial sedative injection.[20] Throughout the surgery, they made an effort to keep patients at a modified OAA/S score of 2, and they also checked the total amount of sedatives used and the length of the treatment.[21]

CONCLUSION:

ERCP is generally considered a safe and effective procedure, it is not without risks. The most common complications of ERCP are pancreatitis, bleeding, and perforation. To minimize the risk of complications, careful patient selection, appropriate pre-procedural preparation, and attention to procedural technique are crucial. It is also important to promptly recognize and manage any complications that do occur.

Authors Contribution:
Asma Abdul Razzak: Data analysis
Muhammad Raza: Conception and design of article

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